

— XV.—On the "*Manus*" of *Phœnicopterus*.

By W. K. PARKER, F.R.S.

IN a note "On the secondary Carpals, Metacarpals, and Digital Rays in the Wings of existing Carinate Birds," published in the Proceedings of the Royal Society (vol. xliii. pp. 322-325, 1888), I have spoken of the presence of *claws* on the first and second digits (pollex and index) of birds (see p. 323).

"In some birds [I said], *e. g.* the Passerines, the pollex, or first digit, has only one phalanx attached to its short metacarpal, the second only two, and the third only one phalanx. In other birds, such as the Plovers, Gulls, and Cormorants, an additional or ungual phalanx is found on the first and second digit; and in some others (*e. g.* *Numenius*), during their embryonic state, a small nucleus also is seen on the end of the aborted phalanx of the third digit."

Further research, made since the passage quoted above was written, has satisfied me that, besides the Passerines, those Picarian forms that have the wing most like that of the Passerines (*e. g.* the *Picidæ*, *Rhamphastidæ*, and *Alcedinidæ*) are entirely without the distal phalanx on the pollex and index.

Except in these cases, and in the abortive and greatly specialized wings of the Penguins, all the other Carinatae have, either for a time or permanently, an ungual phalanx on both the index and pollex. As a rule, that of the pollex only has a neatly formed horny claw covering the little bone, the claw of the index becoming more and more aborted during growth. In the Parrots, however (*e. g.* *Stringops*), the ripe embryo has two well-formed claws, but that on the index is three times as large as that on the pollex.

In *Phœnicopterus ignipalliatu*s the claw on the ungual phalanx of the pollex is well formed and is 8 millim. long; that on the index has lost its proper form, and is a thin epidermic skin over the little third phalanx, which is 3.5 millim. long.

The "*manus*" in this bird is long and slender; the humerus is 195 millim. long, the ulna 207 millim., and the manus

163 millim., so that the distal member of the wing is more than three fourths the length of the ulna, and five sixths the length of the humerus.

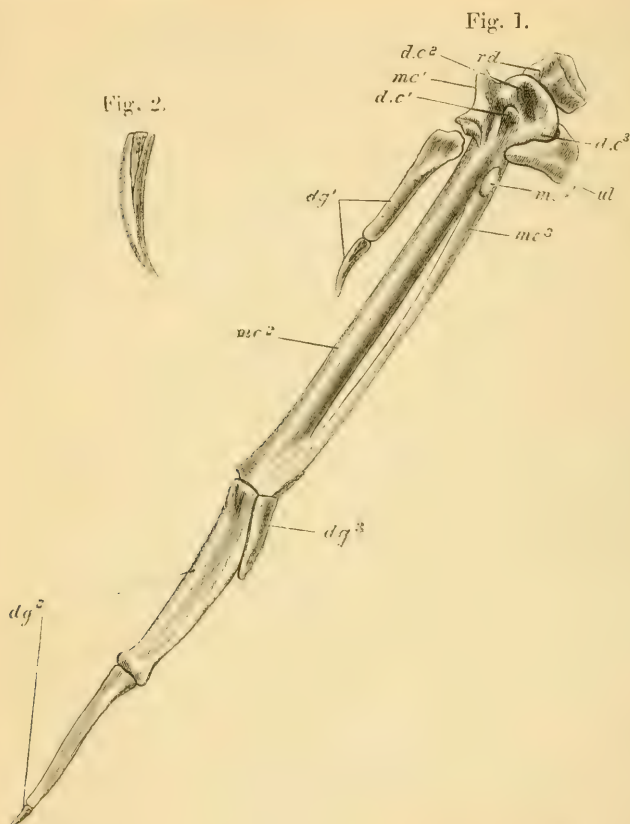


Fig. 1. Inner view of right manus of *Phœnicopterus ignipalliatatus*, $\frac{2}{3}$ nat. size. *rd*, radiale; *ul*, ulnare; *d.c¹*, 1st distal carpal; *d.c²*, 2nd distal carpal; *d.c³*, 3rd distal carpal; *mc¹*, 1st metacarpal; *mc²*, 2nd metacarpal; *mc³*, 3rd metacarpal; *mc³'*, rudiment of 4th metacarpal; *dg¹*, 1st digit (pollex); *dg²*, 2nd digit (index); *dg³*, 3rd digit.

Fig. 2. Claw of pollex of ditto, $1\frac{1}{2}$ nat. size.

This, then, is a good average, as to these proportions, in a long-winged bird, the most extraordinary forms being the "Macrochires" on the one hand, with their short arm and forearm and enormously long manus; and on the other hand the

Hornbills (Bucerotidæ), in which the humerus is moderate, the ulna very long, and the manus extremely short.

In *Phænicopterus* (see figure, p. 184) the two free carpals, radiale and ulnare, are large and well formed; the three fused distal carpals are also normal; there is an oval rudiment of the fourth metacarpal (*mc*³) on the inner face of the third at its proximal end. The bony bridge over the outside of the long interosseous space, formed by an intercalary element, is aborted, and there is scarcely any flanging-out of the first phalanx of the pollex and the second of the index, such as is seen in many long-winged birds, also due to secondary elements; but the first phalanx of the index has the normal dilatation. This phalanx has no interosseous space in it, such as is seen in certain birds. The phalanx of the third digit is only three fifths of the length of this dilated bone; it is slightly arcuate, and strongly attached to the other bone on its ulnar edge.

On the whole, this is a very perfectly formed wing, and is more like that of an Ibis than that of a Goose, as, indeed, is much of the structure of *Phænicopterus**.

XVI.—*On the Ornithology of Northern Borneo.* By R. BOWDLER SHARPE, F.L.S., F.Z.S., &c. *With Notes* by JOHN WHITEHEAD.—Part II.†

(Plates VII., VIII.)

Fam. ORIOLIDÆ.

33. ORIOLUS XANTHONOTUS.

Oriolus xanthonotus, Horsf.; Sharpe, Cat. B. iii. p. 213; Salvad. Ucc. Born. p. 277; Sharpe, Ibis, 1879, p. 251.

a. ♀ ad. Benkoka, Nov. 22, 1885.

b. ♀ ad. Kina Balu, Jan. 14, 1888.

c. ♂ ad. Kina Balu, March 1887.

d. ♂ juv. Kina Balu, April 1888.

* Professor Huxley (Proc. Zool. Soc. 1867, p. 461) has overstated the Anserine characters of this bird; its "bas-i-ptyergoids" are aborted, as in the Ibises.

† Continued from p. 85.